

Application of Inquiry Methods to Academic Achievement of Children with Attention Deficit Hyperactivity Disorder in Inclusive Schools

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Abstract: This study is aimed at examining the inquiry method usage on the academic achievement of children with Attention Deficit Hyperactivity Disorder (ADHD) in Inclusive Schools. The method used is a quasi-experiment with the design of one group pretest and posttest. The subjects were 4th grade students of Inclusive Elementary Schools. The results of the study prove that the inquiry method can help the academic achievement of ADHD children in inclusive primary schools. This is indicated by a change in scores on academic ability by 90%. During the inquiry method usage, ADHD children are not only able to understand the learning material delivered in the classroom but also show a high enthusiasm, active, and serious attitude in participating the learning process in Inclusive Primary Schools.

Keywords: Inquiry; Academic achievement; ADHD

INTRODUCTION

The current inclusive school paradigm is a trend in recent education. This understanding is driven by phenomena to uphold human rights and democracy, and there are demands to fulfil multicultural, equitable education and create equality. For carrying out an inclusive education requires a teacher component, student components, facilities and infrastructure, curriculum and appropriate learning approaches. Especially for inclusive schools with a variety of individual characteristics, it needs a good strategy to be able to provide understanding for every child in the school.

Generally, regular children pay attention and be able to control their social attitudes and behaviour when interacting with others, while the children with ADHD (Attention Deficit Hyperactivity Disorder) tend to be unable to be still and very active. According to Sugiarmim (2006), "Children who have impaired concentration and excessive interactions are known in the medical terms as ADHD". Children who experience the disorder are certainly the centre of attention in joining or socializing with other regular children because the children tend to be more active in moving than other regular children, even those the children seem to often interfere with other friends. Difficulties in children with ADHD also affect the ability to socialize with friends, teachers or the surrounding community. With these problems, of course, there is a need for appropriate handling methods to be able to provide education and skills for children who have hyperactivity in ADHD.

One approach that can be done in inclusive schools is by applying inquiry methods, as teaching where teachers and students learn scientific events with the approach and soul of scientists, (Kuslan and

Stone, 1986). Whereas Piaget and Inhelder (2010) explains the inquiry method is as learning that prepares a situation for children's willingness to conduct their own experiments, to see what is happening, to do something, to use symbols to find answers to their own questions, and to connect their findings with each other, to compare what they find with others found. It can be stressed that the inquiry method is a learning approach that try to make the groundwork for how to develop scientific thinking patterns through the process of knowing directly. This approach places students learning more based on observations of their learning directly and develops creativity in problem solving as well as in explaining the problem solving process.

When observing in three inclusive schools, the researcher observed that there were some problems as follows: (1) There was a striking difference in the application of learning in inclusive schools including learning in class in which the teacher still provided a lot of material classically using the lecture method and give assignments with a high level of material so that it affects the ability of children with special needs to follow the material, especially in Mathematics and Science subjects; (2) It is found that the teacher does not know the specific characteristics of each student in the class well. Almost in every class there are ADHD children study together with slow learner barriers, so the assessment of students' academic abilities is very different that is not adjusted to results of assessment and initial ability of children when they enter class/ grade IV firstly; (3) It is seen the teacher difficulty in modifying the learning design that is able to embrace all the characteristics of children's learning abilities in the classroom, so that the teacher finds difficulty to collaborate learning that is able to improve students' abilities in social fields and the behavior of ADHD children who tend to be active.

Table 1. Recapitulation of the Enhancement in the average score of academic achievement tests for all research subjects.

No	Sub- ject	<i>Pre-test</i>		<i>Post-test</i>		Difference score	Enhancement (%)
		Score	Achievement (%)	Achievement (%)	Achievement (%)		
1.	ADL	90	45%	170	85%	80	40%
2.	SLW	110	55%	180	90%	70	35%
3.	FIG	90	45%	190	95%	100	50%
Sum		290	145%	540	270%	250	125%
Average		96,67	48,3%	180	90%	83,3	41,67%

(5) Class teachers really need a learning approach with a variety of methods, creative, and with effective approaches; (6) Inclusive schools have not fully provided programs to invite parents of students to work together in providing assistance to children when they are out of school.

The results of these observations confirm that one of the obstacles in learning at the inclusive schools is that learning methods have not been implemented that are able to accommodate all the diverse abilities of students in inclusive schools. Thus, this study looks for how the effect of the application of inquiry methods on the development of academic achievement in ADHD children in inclusive schools

METHOD

The research method is the experiment with the type of the quasi-experimental approach. The research was conducted for one month, from February to March. It was taken 3 samples of students with ADHD as research subjects. This study used the independent variable in the form of the effect of the inquiry approach method, as the independent variable. The dependent variable of this study was the ability of academic achievement. The data collection techniques are using formative tests, observations, and interviews. The validity test of the instrument was carried out by educational practitioners namely class teachers in Mathematics and Natural Sciences in the grade IV Primary Schools.

The data analysis process was begun with a review of all data sourced from the results of tests and observations that have been recorded. The next stage was compiling the data obtained from all observations and interviews and then processed to find out the results of research and analysed individually. Quantitative data obtained from the calculation of the pre-test score results before treatment was carried out the application of inquiry methods in class, after that the post-test score results were obtained as the final test after students completing treatment.

The magnitude of the effect of the inquiry method achieved by students can be known by looking at the percentage value of pre-test and post-test results. Based on the criteria above, the inquiry method takes

effect if the results of the final test (post test) on each subject are greater than the percentage of the results of the initial test (pre-test).

FINDINGS AND DISCUSSION

Findings

The research result shows that the inquiry method have effect the ability of academic achievement and social interaction in fourth grade ADHD children in inclusive schools. This is shown by the children's academic ability which is from the results of the pre-test showing the initial ability of all subjects in an average score of 96.67 meaning in the criteria of very poor that is with an average level of achievement of 48.3%. Whereas after treatment the ability of academic achievement on all subjects is at a very high criterion namely an average score of 180 with an average level of 90% achievement. This shows that on average all subjects mastered 90% of their academic achievement abilities.

For analyzing the data after and before treatment, it is obtained the level of achievement in increasing the average percentage of each subject, which is as follows: includes science and Mathematics learning.

The data in table 1 shows that the initial ability of all subjects is in the criteria of very low achievement below ($> 56\%$), namely an average score of 93.3 with an achievement level of 48.3%. This shows that on average all subjects mastered only 48.3% of mathematics and science learning provided by teachers using conventional approaches. Whereas after treatment using the inquiry approach method, all subjects are at a high criterion with an average score of 180 with an achievement level of 90%. This shows that on average all subjects mastered 90% of academic ability in mathematics and science that have been given using the inquiry approach. Thus, it can be seen an increase in the average academic achievement of ADHD children after using the inquiry approach in all subjects namely student learning outcomes = Average posttest scores (90%) - Average pretest scores (48.3%) = to 41.67 % or in the low category below $> 56\%$. To be clearer the following graph histogram scores and percentage pre-test and post-test for all research subjects:

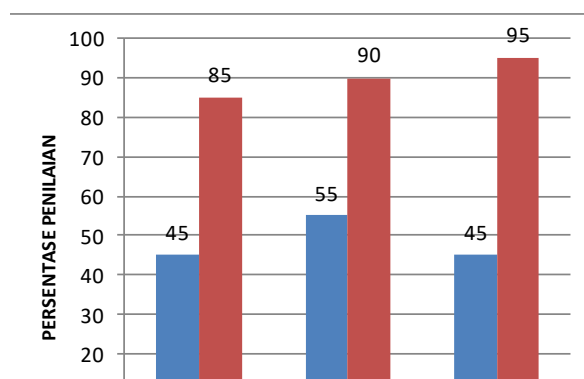


Figure 1. Histogram Graph of Score Results and Percentage Pre-test and Post-test for All Research Subjects

The figure 1 shows the effect of the inquiry approach based on the percentage of pre-test and post-test scores after being given treatment, this means that the application of inquiry method has an effective effect on the ability of ADHD children's academic achievement in inclusive schools indicated by an average value of 41,67%. Therefore, it can be concluded that the inquiry approach can affect academic achievement and ADHD children in inclusive schools.

Discussion

The ability to provide knowledge possessed by each teacher is very diverse. The limitations in choosing a approach method in teaching, and the ability to process material with a curriculum that is adjusted by the government makes teachers more required to be able to manage their respective classes. As for the various limitations each student has in the class, especially in ADHD children in inclusive schools, in Martin's opinion (2008) defines ADHD as "imperfectly developed behavior that is less able to pay attention, controlling gestures and controlling motorcycle." So when learning in class, ADHD children make their own differences in the results of each individual's abilities.

The behavioural habits of ADHD children can be summarized from the opinion of Kewley (2011), including: (a) excessive resistance behavior; (b) active disruptive behavior; (c) excessive or depressive anxiety; (d) specific learning difficulties; (e) obsessive; (f) difficulties in developing coordination; (g) difficulty in the listening process; and (h) speech and language problems. As for the ADHD children in this study that have the characteristics of children who oppose the teacher and peers in class, have disruptive behaviour, difficulty in the process of listening to information and have problems in verbal communication that is often speaking negatively which can make his friends emotional. The positive ability possessed by ADHD children is to have hidden talent skills and have the ability to think critically. From the results of this analysis, if the teacher continues to learn by learning methods or models such as lectures with backward

stacked seating arrangements such as those in the classroom in general, then ADHD children in the class will not gain useful knowledge at school.

Therefore, we need a new approach that attracts the attention of children and is able to make children superior in their academic abilities and social interaction abilities. One of them is the inquiry approach method, according to Sagala (2012), "The inquiry method is a learning method that seeks to instill the basics of scientific thinking in students who act as learning subjects, so that, in this learning process students learn more by themselves, developing creativity in solving problems." It can be emphasized that the inquiry method is a method that gives an opportunity for students to be actively involved in the learning process through experiments, so that, it can train students in creativity and critical thinking to find their own knowledge that will ultimately be able to use their knowledge in solving problems faced.

The inquiry approach method is one alternative that can provide stimulus to change students to be excited or stimulated so that learning becomes fun. The application of this inquiry approach method is 3 ADHD students in class IV, but it can also directly involve all students and able to train students in social interaction in group activities in class. The stages carried out summarized by Sound & Trowbridge in (Mulyasa, 2005) namely; (a) the teacher must be skilled in choosing relevant issues to be submitted to the class and in accordance with students' abilities; (b) the teacher must be skilled at fostering student learning motivation and creating enjoyable learning situations; (c) there are sufficient learning facilities and resources; (d) there is freedom of students to give opinion, discuss; (e) the participation of each student in each learning activity; (f) not much interference and intervention on student activities.

ADHD student learning outcomes after the use of the inquiry approach method in inclusive schools that took a sample that is in class IV found that there is a significant percentage of effect on the ability of children with ADHD. That is the average percentage of academic achievement rose by 41.67%. This ability gets a very low average rating of <54%, but when viewed from the results of research that has been carried out, it can prove that the application of inquiry methods in inclusive schools can have an effective effect on the ability of academic achievement especially for these schools that there are children with ADHD. The application of inquiry method in this research can be said to be successful because during the implementation process all subjects in the class look more interested and enthusiastic and can make all subjects more easily understand the material presented by the teacher, because learning is directly observing. Besides, all subjects are also interested in directly involved to find the results of learning that has been done.

CONCLUSSION AND SUGGESTION

Conclusion

Based on the results of research and discussion, it can be concluded that learning with inquiry methods on academic achievement of ADHD students shows an effective effect on Mathematics and Science subjects. The percentage of the average score before treatment that is 48.3% has increased to 90%, or increased by 41.67%. This shows that the inquiry method has an effective effect on the academic achievement ability of ADHD children.

Suggestions

Suggestions that can be given in the results of this study include:

For teachers, learning using the inquiry method is very appropriate, but it is necessary to pay attention to the stages that will be carried out such as: (a) Discovery learning; (b) interactive demonstrations; (c) inquiry Lesson; (d) lab inquiry; (e) hypothetical of inquiry, can be an interesting lesson for children, especially ADHD.

The use of inquiry methods should be done by using media that can clarify the subject, for example in learning science about plants. Projector media can be used to visualize the learning by watching videos directly. By bringing tree plant media as a concrete example the children can observe more closely.

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